**UCL DIVISION OF MEDICINE**
INSTITUTE OF NUCLEAR MEDICINE

# PhD studentship on image reconstruction algorithms for improved quantification in PET/CT

**Description:**
An EPSRC Industrial CASE PhD studentship (3 year PhD) co-sponsored by GE Healthcare is available in the UCL Institute of Nuclear Medicine under the supervision of Dr Kris Thielemans. The funding covers an annual stipend  (£17,226) and tuition fees at the rate for UK nationals and EEA migrant workers.  The student will be registered for a PhD in the Division of Medicine at University College London.

PET/CT scanners combine Positron Emission Tomography with X-rays to provide functional and anatomic images of the patient. In current clinical practice in oncology, PET data are reconstructed with specific algorithms to provide good visual appearance for lesion detection. However, there is increased interested in accurate quantification of the PET tracer concentration in lesions and/or organs, for example for therapy follow-up. This studentship will attempt to improve PET image quantification by investigating the use of "regularised" image reconstruction algorithms which allow incorporation of prior information, such as information from anatomical data from CT or the correlation between different respiratory states and/or time frames. The project will involve training in state of the art image reconstruction techniques and optimisation theory.

UCL INM has considerable expertise in image reconstruction and access to a variety of PET/CT and SPECT scanners. Moreover, we have excellent collaborations with the UCL Centre for Inverse Problems and the UCL Centre for Medical Imaging.

**Requirements:**
The candidate is expected to have at least an upper second class degree, a Masters degree or equivalent qualifications (see http://www.ucl.ac.uk/prospective-students/graduate-study/application-admission/general-entrance-requirement) in a relevant subject area.  A strong mathematics background is essential. Good working knowledge of C++ and/or MATLAB is preferable. The candidate must be committed to deliver excellence in research, and will also be expected to provide regular, biannual reports on research progress.

Further eligibility information can be found at http://www.epsrc.ac.uk/skills/students/help/Pages/eligibility.aspx

To make an application please send a CV and contact details, including email addresses for two referees, to Dr Kris Thielemans at k.thielemans@ucl.ac.uk. Please include a covering letter indicating why you believe you are suitable for the studentship, your long-term research and professional goals, and any particular expertise you have that you feel may be applicable in this work.

**Closing date: 10 Nov 2013**